

CLAIMS

1. A fume removal apparatus for a semiconductor manufacturing chamber, the fume removal apparatus comprising:

5 a fume exhaust pipe communicating with a semiconductor manufacturing chamber to form an initial vacuum in the semiconductor manufacturing chamber and having a shape protruding from a bypass pipe and communicating with the bypass pipe in which a roughing valve is formed;

10 a fume exhaust pipe opening-and-closing valve disposed on the fume exhaust pipe to open and close the fume exhaust pipe;

a vacuum pump connected to the fume exhaust pipe to form a vacuum in the fume exhaust pipe;

15 a control member controlling an operation of each of the fume exhaust pipe opening-and-closing valve and the vacuum pump; and

a lid opening-and-closing sensing member sensing whether or not a chamber lid opening and closing the semiconductor manufacturing chamber is opened or closed,

20 wherein, when fumes are required to be removed from the semiconductor manufacturing chamber, the control member opens the fume exhaust pipe opening-and-closing valve to open the fume exhaust pipe and operates the vacuum pump to form a vacuum in the fume exhaust pipe, so that the fumes in the
25 semiconductor manufacturing chamber are discharged externally

through the fume exhaust pipe,

wherein, when the lid opening-and-closing sensing member senses that the chamber lid is open, the control member operates the vacuum pump.

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2. A fume removal apparatus for a semiconductor manufacturing chamber, the fume removal apparatus comprising:

a fume exhaust pipe communicating with the semiconductor manufacturing chamber to form an initial vacuum in the semiconductor manufacturing chamber and having a shape protruding from a bypass pipe and communicating with the bypass pipe in which a roughing valve is formed;

a manual valve disposed on the fume exhaust pipe and operated by external force to open and close the fume exhaust pipe;

a manual valve operation sensing member sensing whether or not the manual valve is operated;

a vacuum pump connected to the fume exhaust pipe to form a vacuum in the fume exhaust pipe; and

a control member controlling an operation of the vacuum pump,

wherein, when the manual valve operation sensing member senses that the manual valve opens the fume exhaust pipe, the control member operates the vacuum pump to form a vacuum in the fume exhaust pipe, so that fumes in the semiconductor

manufacturing chamber are discharged externally through the fume exhaust pipe.

3. The fume removal apparatus of claim 2, further
5 comprising a lid opening-and-closing sensing member sensing whether or not a chamber lid opening and closing the semiconductor manufacturing chamber is opened or closed,
wherein, when the lid opening-and-closing sensing member senses that the chamber lid is open, the control member
10 operates the vacuum pump.

4. A fume removal apparatus for a semiconductor manufacturing chamber, the fume removal apparatus comprising:
a fume exhaust pipe communicating with the semiconductor
15 manufacturing chamber to form an initial vacuum in the semiconductor manufacturing chamber and having a shape protruding from a bypass pipe and communicating with the bypass pipe in which a roughing valve is formed;
a fume exhaust pipe opening-and-closing valve disposed on
20 the fume exhaust pipe to open and close the fume exhaust pipe;
a vacuum pump connected to the fume exhaust pipe to form a vacuum in the fume exhaust pipe;
a control member controlling an operation of each of the fume exhaust pipe opening-and-closing valve and the vacuum
25 pump;

a lid opening-and-closing sensing member sensing whether or not a chamber lid opening and closing the semiconductor manufacturing chamber is opened or closed; and

a pressure sensing member sensing pressure in the
5 semiconductor manufacturing chamber,

wherein, when fumes are required to be removed from the semiconductor manufacturing chamber, the control member opens the fume exhaust pipe opening-and-closing valve to open the fume exhaust pipe and operates the vacuum pump to form a vacuum
10 in the fume exhaust pipe, so that the fumes in the semiconductor manufacturing chamber are discharged externally through the fume exhaust pipe, and

when the lid opening-and-closing sensing member senses that the chamber lid is open and the pressure sensing member
15 senses that pressure in the semiconductor manufacturing chamber is equal to atmospheric pressure, the control member opens the fume exhaust pipe and operates the vacuum pump.

5. The fume removal apparatus of claim 4, further
20 comprising a manual valve disposed on the fume exhaust pipe to close the fume exhaust pipe when the fume removal apparatus for the semiconductor manufacturing chamber malfunctions.